

Integrating
The
Monorail

TRANSPORTATION

DEIS
Comments

City of Seattle Comments on the
Seattle Monorail Green Line
Draft Environmental Impact
Statement

October 2003



City of Seattle

OVERVIEW

The City's DEIS comments related to transportation emphasize the need to more definitively address transit, bicycle and pedestrian connections through monorail facility design; the need to refine alignments to optimize the balance of street space for freight, transit, bicycles, pedestrians, auto traffic and parking; and the need to more definitively address parking supply and demand impacts, including hide-and-ride parking impacts in neighborhoods.

The SMP interpretation of Council Resolution 30486 concerning mitigation (see pages 4-35, 4-36, 4-88, 4-95) is addressed in a September 16, 2003 letter from Seattle Mayor Greg Nickels to SMP Executive Director Joel Horn. This letter is attached and incorporated into these comments by reference.

TRAFFIC OPERATIONS

The FEIS would benefit from a summary discussion of the operational impacts of center and side-of street alignment alternatives. Because of sight distance requirements, center-of-roadway alignment alternatives will likely require restrictions to left-turns into and out of driveways and result in limited storage lengths for left-turn lanes at intersections. These appear to be unavoidable adverse impacts. Side-of-street alignments show greater potential to be integrated into a roadway design that maintains the essential access and mobility functions of the roadway, but these design solutions may impact on-street parking. Additionally, even optimized side-of-street alignments may impact transit operations, freight mobility, and/or critical turning movements in some areas along the Green Line corridor, and specific mitigation measures should be identified in such instances.

Level of Service and Congestion

The DEIS identifies intersections that will experience significant adverse impacts to

level of service with some of the alternatives:

- 15th Ave NW/NW 85th St.
- 15th Ave NW/NW Market St.
- W Dravus St/16th Ave W
- Elliott Ave W/W Mercer Pl
- Denny Way/Broad St
- Denny Way/Second Ave
- Denny Way/Fifth Ave
- California Ave SW/SW Alaska St
- California Ave SW/SW Brandon St
- California Ave SW/Fauntleroy Way SW

The City would like to further review the Synchro calculations of intersection and critical movement level of service and confirm your conclusions prior to publication of the FEIS. For those intersections identified in the FEIS as experiencing a significant adverse impact (Level of Service E or F), SMP should identify specific mitigation measures. The City of Seattle does not recognize LOS E as an acceptable level of service at signalized intersections.

In the DEIS (4-90, 4-91, 4-93, 4-94, 4-97), SMP proposes to fund intersection improvements in a ratio based on the percentage of projected volumes at these intersections resulting from the Green Line. The issue is: does the Green Line worsen traffic conditions at these intersections and what is then required to mitigate this impact? It is not solely the volume that matters, but that fact that the project results in a worsening of conditions. It may be a reasonable approach, however, to negotiate contributions to intersection improvements based on a ratio of impact (rather than volumes). This would

acknowledge that general traffic growth is also contributing to the worsening of conditions, and would give the City some flexibility to prioritize the improvements, combine funds from multiple sources to achieve multiple objectives, and so forth. In a limited number of instances, the City has entered into mitigation agreements in which the project proponent makes a payment to the City which is, effectively, placed in escrow. The City would commit to complete a specified improvement, or a mutually acceptable alternative improvement, within a defined period of time.

In several segments along the monorail alignment, existing street widths do not meet current City standards, which are intended to provide improved safety and more efficient operations. A listing of these street segments should be included in the FEIS if SMP is not proposing to widen the street widths to current standards. The decision to continue to allow sub-standard lane widths is a discretionary decision of the City Traffic Engineer.

In the discussion of mitigation measures common to all segments (4-88), the DEIS states that "the project description anticipates that guideway columns would be placed to avoid potential impacts to vehicle access and circulation to the extent possible.... In locations where property access impacts from column placement cannot be avoided, an alternative access may be provided." This phrasing suggests that alternative access may not be provided. If so, what other mitigation would be pursued? If no mitigation is feasible, such circumstances should be identified as unmitigated (and possibly significant) adverse impacts.

The DEIS sometimes indicates that certain capital improvements are "assumed" in the technical analysis. This seems to indicate that these improvements must be in place for the analysis to be valid; therefore, the improvements should be part of the project description. This is supported by the following statement from Section 4.1.3.1 (Mitigation Measures Included In Project

Description and Additional Mitigation Options): "The traffic control features and channelization assumptions that were made for conducting the traffic analysis were assumed to be part of the project description and are described for each segment" (page 4-88). However, the text that follows characterizes these improvements as mitigation that could be implemented to reduce impacts, rather than as an inherent component of the project that would be built. Is it mitigation or project description?

The DEIS suggest that new signals would be provided at the locations listed below. The FEIS should include these project elements in the Project Description or identify them as mitigation, but acknowledge that it will be necessary to meet the technical criteria found in the Manual of Uniform Traffic Control Devices to warrant signalization, and alternative mitigation may be proposed if these locations do not meet the criteria.

The references to these proposed signalized intersections are on pages 4-36, 40, 45, 48, 49 and 75. The locations include:

- 15th Avenue NW/NW 83rd Street
- 15th Avenue NW/NW 63rd Street (this intersection also is identified as 15th/73rd and 15th/53rd - this needs to be clarified.)
- 15th Avenue W/W Armour Street
- Elliott Avenue W/W Lee Street
- SW Avalon Way/SW Genesee Street
- California Avenue SW/SW Brandon Street
- California Avenue SW/SW Findlay Street
- California Avenue SW/SW Juneau Street
- California Avenue SW/SW Raymond Street.

Significant pedestrian volumes are identified for boarding/alighting stations along the Green Line. This will impact the effectiveness of the signal timing. Not specifically noted in the DEIS is the impact to traffic signals caused by increased pedestrian volumes around stations. In

particular, would existing walk times be adequate? Would existing pedestrian-actuated (push button) signals be appropriate? Will existing controllers be capable of accommodating changes to walk time, etc, especially on a time-of-day basis? These impacts should be analyzed. Pedestrian walk-time calculations should be performed for signalized intersections within one block (300' minimum) of stations so that impacts and mitigation can be identified.

Freight Mobility

Truck turns from side streets are difficult to accomplish for medium to larger trucks. Trucks need more time to accelerate into traffic and cross traffic streams. Further analysis should be undertaken to identify problem locations where monorail structures may displace existing truck access. When U-turns and U-turn routes are required for both trucks and automobiles along the Green Line Route and where truck left-turns may become restricted by the project, U-turn routes and U-turns will need to accommodate WB-67 vehicles, without adverse impacts to any residential or local streets. Where Truck-U-Turns and turn movements are expected and impacted mitigation may include; new signals, new left turn signals, new left turn lanes, signing and development of new U-turn Routes for trucks--these U-turn routes may utilized arterials or non-arterial industrial streets (4-44.)

Where driveway or intersection visibility constraints lead to access restrictions the analysis should reflect that there would be additional traffic circulating around the block or through adjacent signalized intersections (4-44). This may add turning traffic at signals or into adjacent neighborhoods that previously would not have experienced this traffic. This would be a secondary impact from the project, associated with changes in driveway or intersection access due to column placement and visibility.

In the DEIS section titled "Truck Circulation", emphasis is given that Truck

turns and roadway widths will be maintained (4-44, 4-62), but it should also be disclosed that radii modifications for curb returns and associated relocations may be needed to accomplish some new movements.

The FEIS should describe coordination with railroads and confirm that there will be no disruption to rail spurs, leads, and service tracks. If there are disruptions, describe impacts and what mitigation tools the railroads have recommended.

Transit Operations

The FEIS should identify the impacts on monorail facilities located in the roadway on the design and operation of the arterial system (such as signalization or channelization) and the resultant impacts on transit operations (speed and reliability). The FEIS should identify measures such as: off-street bus transfer facilities incorporated into station sites; in-lane bus stops; bus queue-jump facilities; exclusive transit lanes; and/or transit signal priority to avoid or minimize adverse impacts to transit speed and reliability.

In the DEIS, some station plans show a new curb alignment that pushes the curb into the street, affecting channelization. This type of curb extension is not represented on curbs preceding or following the station area. Without specific channelization drawings, these abrupt changes in channelization cause serious safety concerns. Do not assume curb extensions that are not carried throughout a corridor without specific City design approval.

Throughout the Transportation section, the statement is made that mobility and transit reliability and transit time will improve. Is this referring solely to Monorail service or also to King County Metro transit service? Is it assumed that Metro transit service will increase as a feeder to the Monorail stations and, if so, what would be the impact if this increased service is not realized? Specific proposed changes to Metro bus service are not identified in the DEIS.

The DEIS gives limited information on how transit travel time will be impacted on door-to-door travel (4-26). Sound Transit provided this information for the Central Link project EIS using their patronage model. The TCQSM also offers a LOS measure that compares transit-to-auto travel time, door-to-door. No mention is made of the time needed to get between the first mode and the second mode. Having guidelines in place for short transfers is important.

Traffic Safety: Mid-Block High Accident Locations

Include in the FEIS an analysis of the High Accident Locations at mid-block, as well as the High Accident Locations at intersections listed in the DEIS. The information and listing of these locations will be provided by SDOT to SMP. The 2002 High Collision Mid-Block listing included the following two mid-blocks locations: 15 Ave NW between NW 83 and NW 85 Streets, and 15 Ave NW between NW 85 and 87 Streets.

Traffic Safety: Sight Distance

The DEIS states on numerous occasions that "Columns could be located to minimize impeding side street intersections, driveways, or loading docks, and to provide adequate sight distance around the columns." Since columns are spaced from 80 to 150 feet, it will be very difficult to provide sight distance around columns which are spaced 3 feet off the curb line. This would be even more difficult where columns are located at intersections. Please address how sight distance issues will be addressed when column placement options have been exhausted.

In the Traffic Safety section, the text states that "The Green Line alignment alternatives would result in increases in vehicular, transit, bicycle, and pedestrian activity in the vicinity of the station". The discussion should note that this increased activity likely would lead to a proportional increase in potential traffic conflicts among these modes.

Currently, driveway and property access is not constrained along much of the Green Line Route (4-33). Design for the Green Line must review visibility at all driveways and unsignalized intersections along the route to determine if current movements (into and out from the driveway or intersection) can still be safely managed - the DEIS should refer to AASHTO guidelines for entering sight distance and design should use AASHTO guidelines in it's evaluation and final design. Should the design review identify locations where the guidelines cannot be met, some turning movements may need to be restricted for those locations.

Signal Infrastructure

Much of the traffic signal infrastructure along Green Line seems to be impacted by the SMP structures (columns, footings, guideway). Vertical clearance of the guideway and signal sight lines will need additional analysis during the design phase. The DEIS suggest there will be a need for the SMP to reconstruct many signal systems and/or to provide temporary signalization during construction; these elements of the project should be discussed in the Project Description or as mitigation.

Street and Sidewalk Lighting Infrastructure

Alternatives that occlude existing street lighting or require street light relocations may impact the quality of street and sidewalk lighting--analysis should be provided (such as calculations for ft-candles and uniformity), and mitigation measures (new pedestrian scale and street lighting as needed) should be identified.

TRANSIT, BICYCLE & PEDESTRIAN CONNECTIONS

The Purpose and Need statement should discuss in detail how this project would respond to existing and future demand for transit opportunities and how it accommodates planned regional growth. Other details missing are specific transportation needs in the project corridor, overall transportation goals and objectives, and how the selection of a preferred alignment and station locations are being made through this DEIS process.

To support and promote ridership, it is essential to design for seamless connectivity between the monorail and other modes of transit. The FEIS should include more definitive drawings and descriptions of the project facilities that will result in good intermodal connections at major transit hubs such as King Street Station and Westlake, effective bus transfers at neighborhood stations that anticipate a bus feeder network (notably Crown Hill, Market, Dravus, Delridge, Avalon and Morgan Junction), and pedestrian access to those stations that may present access challenges. At minimum, space to accommodate future improvements necessary to attract and accommodate ridership should be provided at station areas.

Transit Connections

The DEIS assumes that some existing transit routes will be truncated at Green Line stations - suggesting a feeder operation. The FEIS should demonstrate that there are resources available and coordination between SMP and Metro consistent with this assumption, and identify the on- and off-street facilities to be developed as part of the Green Line project that will facilitate this connection. (Most new transit facilities, including the elevated transit system in Vancouver, BC, have built bus transfer facilities to provide seamless transfer connections (examples include Vancouver Skytrain and transit systems in Portland, Salt Lake, Denver, Vancouver, Hiawatha, Houston, and Dallas.) The DEIS does not

identify such facilities in the Project Description or in station footprint plans. The FEIS should either demonstrate how the Green Line can accomplish the transfers predicted in the ridership study without such facilities, or incorporate bus transfer facilities in the Project Description.

Implicit in the discussion of performance measures (4-29) is the assumption related to transfer penalties. What assumptions were made related to the transfer penalties between feeder transit and monorail modes?

Bicycle Circulation and Access

Additional consideration should be given to the demand for bicycle parking at downtown stations. While limitations on station footprints may limit or preclude bicycle parking, the issue should be re-examined as design moves forward, as part of the SMP's effort to address the findings of its system-wide bicycle access study. The potential to provide a "bike station" with extensive bicycle parking and supporting facilities at one downtown station that compensates for the inability to provide bicycle parking at other stations should be explored.

The DEIS Access and Circulation sections do not recognize that bicyclists should be considered part of normal traffic. The Bicycle and Pedestrian Facility impact sections for each segment focus solely on bike trails, lanes, and commonly used routes identified in the Seattle Bicycling Guide Map. However, impacts to bicyclists should not be limited to this, since bicycles are entitled to travel on every street in the city, unless specifically prohibited. Even though bicycles are legally considered vehicles, there are differences that result in differential impacts, compared to motor vehicles. For example, because bicycles are much narrower than motor vehicles, and because bicyclists tend to ride as far to the right as possible, column placement can disproportionately affect the visibility of bicyclists by motorists. In other words, the visibility of bicyclists from cars pulling out of driveways and intersecting streets can be more limited compared to the visibility of approaching

motor vehicles. Describe the impacts and a list of possible mitigation tools to be used to offset these impacts.

In the Pedestrian and Bicycle Facilities section, the DEIS does not fully address bicycle access to stations. Many of the stations are located at the intersection of two major arterial streets but within a block of residential streets. Consequently, many bicyclists who do not feel comfortable riding on high volume, busy arterial streets, will use the sidewalk to get from the nearest residential street to the station. This will result in bicycle/pedestrian conflicts as they compete for the same space. Providing appropriate bicycle and pedestrian facilities mitigates this impact. The 1999 AASHTO Guide for the Development of Bicycle Facilities should be used when designing bicycle facilities.

The required sidewalk width is stated as 5' clear width at and 300' from each station entrance (4-35). This is not adequate if the facility in question is going to be shared by both bicyclists and pedestrians. The recommended minimum clear width for a shared use facility is 10', but 12' or 14' might be more appropriate given high pedestrian and vehicle volumes (AASHTO Guide for the Development of Bicycle Facilities, page 36).

The "Passenger Load" section refers to the accommodation of wheelchair users and passengers with strollers, but no mention is made of passengers with bicycles. The FEIS should describe bicycle loading accommodations or describe the impacts to bicyclist if accommodations are not made and list mitigation tools that may be used to off-set the impacts to bicyclists.

Pedestrian Connections

A more thorough documentation and mapping of transportation facilities in station areas should be developed to identify barriers that exist to pedestrian travel to and from the stations. The existing infrastructure in the area around the station (approximately 1/4 mile) will be impacted by

the Green Line, with areas closer to stations likely to be impacted more significantly than the areas further away. The monorail stations will create new pedestrian desire lines (desired routes of travel). If obstructions or safety issues exist along these new desire lines, new infrastructure must be added to get people to the station safely. SMP should create a pedestrian circulation plan showing how pedestrians will travel to station entries. Examples of barriers to pedestrian circulation include missing sidewalks and the lack of an appropriately located signalized crosswalk.

The DEIS does not analyze the cumulative impacts to pedestrian and bicycle safety and access as at the stations. The blocks immediately adjacent to the monorail stations will be the area at which many activities converge. Pedestrian level of service calculations based on the Highway Capacity Manual do not take into account shared bicycle and pedestrian traffic and queuing for transit. In the FEIS, the Project Description should incorporate a circulation plan for each station area that:

- Identifies a clear path for pedestrians to access the stations (clear of bicycle parking or transit queuing areas).
- Identifies station entries in relation to this clear pathway and to existing pedestrian infrastructure. For example, locating an entryway near an existing traffic signal rather than at a mid-block location will improve pedestrian safety since fewer pedestrians will cross mid-block. In many if not most cases, this will include multiple access points to the stations.
- Identifies a clear path for bicyclists to access the stations and station bicycle parking facilities. If the facility is going to be shared by both bicyclists and pedestrians, use the 1999 AASHTO Guide for the Development of Bicycle Facilities. Bicycle parking itself should be situated outside of the pedestrian paths and be convenient to the

- station entrances without obstructing them.
- Identifies the path by which pedestrians may transfer between monorail and bus transit. This path should work with other planned circulation paths and not leave riders waiting for transit in other established pathways.
- Identifies a clear path for pedestrians walking along the sidewalk but not accessing the station.

Pedestrian connections are discussed in the Land use section in the downtown segment (p 4-150) but are not discussed in segments including urban villages. For consistency, pedestrian connections should also be included in the urban village segments or a rationale provided for having not done so.

The station plans seem to show a level of design and agreement on specific bus zone relocations, layovers, passenger load zones, and station entrances/exits that are very preliminary. Please note in the FEIS that all Station plan assumptions are pre-design assumptions and additional input and agreements with adjacent communities, SDOT, and transit agencies are required before final determination and locations can be determined.

Please clarify the statement about impacts of higher ridership (4.16.2.1), stating that "the private development projects in the Seattle Center/Queen Anne/Belltown, Downtown and West Seattle segments could create a substantial number of residential and office units and could result in impacts from higher ridership."). Is this growth already factored into 2010/2020 ridership projections? (Cumulative Section)

PARKING

Impacts to Parking Demand

The City believes that hide-and-ride parking impacts are inevitable within one-quarter mile of the Ballard segment stations, the Dravus station, and the West Seattle segment stations, unless parking management programs and measures are implemented. The Project Description should include a commitment to parking management programs and measures. The specific programs and measures can be identified later in the project design and approval process, with assistance from the City and input from neighborhood stakeholders. The Project Description should commit to implementation of parking management strategies before stations open, to avoid rather than react to hide-and-ride parking impacts.

The DEIS inaccurately discusses the applicability of residential parking zones. RPZs in Seattle are typically applicable on residential streets of at least five contiguous blocks, 75 percent or higher parking utilization and at least 25 percent attributed to an identifiable parking/traffic generator. If not all of these criteria are met, an RPZ can be established when the Transportation Director determines that a residential parking zone will ameliorate the parking problem and the public interest would be served.

Impacts to Parking Supply

Impacts to the parking supply should be mitigated through measures such as:

- creating new on-street parking nearby by converting unrestricted parking to short-term parking (through installation and enforcement of paid parking technology, time-limit signs, and load zones);
- identifying opportunities for shared off-street short-term parking;

- creating new off-street short-term parking supply as part of a joint development or single-purpose parking facility; and
- supporting development of a transportation management association or marketing programs that provide parking and transportation demand management tools to local businesses in the area to reduce auto travel demand.

Where parking losses are identified, the FEIS should identify the effect of those losses on the parking utilization rate. If this information is provided in the Transportation section, please cross-reference it in the Land Use section. The Transportation section reports supply and demand for on street parking only. To consider the Land Use impacts of changes in parking supply, off-street parking impacts should be identified; a good reference source is the Puget Sound Regional Council, Parking Inventory for the Central Puget Sound Region: 2002, Spring 2002, (on-line at www.psrc.org). The PSRC study boundaries for downtown are Denny to S Royal Brougham Way.

Several of the alternatives give parking ranges depending on whether left-turns/u-turns will be allowed (specifically, Alternatives 1.2-Center, 2.1.1 and 2.1.2). If this is a likely outcome given other City/SMP discussions and the City's decisions, this should be stated as more of a certainty.

Some alternatives identify new on-street parking to be provided. The feasibility of the new on-street parking should be confirmed to the extent possible in the FEIS, based on more detailed analysis of roadway design considerations.